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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,212	02/05/2002	Sang-Young Lee	B-4483PCT 619789-9	8084

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EXAMINER

CHEN, VIVIAN

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/049,212	Applicant(s) LEE ET AL.	
	Examiner Vivian Chen	Art Unit 1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2004.
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16-28, 30-36 and 47-58 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☒ Claim(s) 17-28, 30 and 33-36 is/are allowed.
6) ☒ Claim(s) 1-14, 16, 31, 32 and 47-58 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 15, 29, 37-46 have been cancelled by Applicant.
2. The indicated allowability of claim 15 (now incorporated into claims 1-14, 31-32) and 16 is withdrawn in view of the newly discovered reference(s). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 112

3. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 is vague and indefinite because the preamble ("separator for batteries") appears to be inconsistent with the body of the claim unless the phrase "for batteries" merely refers to an intended use.

Claim Rejections - 35 USC § 103

4. Claims 1-14, 31-32, 47-48, 50, 52, 54, 56, 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over NAKASHIMA ET AL (US 5,273,657).

NAKASHIMA ET AL discloses a multilayer membrane suitable for use as battery separators comprising one or more dense active layers on at least one side of at least one porous support layer, wherein the membrane layers and the support layers have different pore

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sizes/distributions. The active layer(s) have a typical thickness of less than 10 microns, typical pore sizes of less than 1 micron, and is composed of polymers such as polysulfone. The support layer has a typical thickness at least twice the active layer(s), typical pore sizes of at least twice the active layer pore size, and is composed of polymers such as polysulfone. The polysulfone used in the active and support layers is dissolvable in organic solvents (e.g., dimethyl sulfone, etc). The membrane layer is suitable for use as separation membranes for reverse osmosis filtration articles. (line 45-50, col. 1; line 48-62, col. 2; line 10-30, col. 5; line 12-25, col. 7; line 38-45, col. 10; line 32-51, col. 11; line 11-30, col. 15; column 16)

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize membranes comprising at least two layers with differing porosity characteristics in order to optimize durability and reaction efficiency for known usages such as battery separators and filtration. It would be obvious to adjust the air permeability of the composite (claim 10) and the wetting properties (claim 11) depending on type of reactants and reaction process and equipment used in order to optimize the transport, electrical, or other physical characteristics for given applications. One of ordinary skill in the art would have used conventional functional layers such as adhesion-promoting polymeric tie layers (claim 13) between the membrane and support layers in order to prevent delamination. Regarding claims 31, 47-58, the pore formation steps (claim 31) and stretching steps (claim 47) and method of making (claim 48, 50, 52, 54, 56, 58) are product-by-process limitations and is not further limiting in as so far as the structure of the product is concerned. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. *The patentability of a product does not depend on its method of*

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production. If the product in the product-by-process claim is the same or or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." [emphasis added] *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113. Once a product appearing substantially identical is found, the burden shifts to applicant to show a **unobvious** difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1993).

5. Claims 16, 49, 51, 53, 55, 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over NAKASHIMA ET AL (US 5,273,657), as applied to claim 1, and further in view of SPOTNITZ ET AL (US 6,322,923).

SPOTNITZ ET AL discloses that it is well known in the art to use microporous polymeric membranes as battery separators in rechargeable lithium batteries (columns 1-2).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the membranes of NAKASHIMA ET AL as separators in conventional battery structures as disclosed in SPOTNITZ ET AL in order to obtain durable, high efficiency electrical devices. Regarding claims 49, 51, 53, 55, 57, the recited method of making are product-by-process limitations and is not further limiting in as so far as the structure of the product is concerned. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. ***The patentability of a product does not depend on its method of production.*** If the product in the product-by-process claim is the same or or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." [emphasis added]

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Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vivian Chen whose telephone number is (571) 272-1506. The examiner can normally be reached on Monday through Thursday from 8:30 AM to 6 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones, can be reached on (571) 272-1516. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

The General Information telephone number for Technology Center 1700 is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

February 3, 2005



Vivian Chen
Primary Examiner
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In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113. Once a product appearing substantially identical is found, the burden shifts to applicant to show a ***unobvious*** difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1993).

Response to Arguments

6. Applicant's arguments filed 11/15/2004 have been considered but are moot in view of the Applicant's amendments and the new ground(s) of rejection, based on newly discovered references.

Allowable Subject Matter

7. Claims 17-28, 30, 33-36 are allowable over the prior art of record.

8. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to disclose or suggest: (1) the claimed methods of forming a composite membrane, wherein an active layer is formed on the precursor film by application of a liquid polymer solution, followed by stretching (claims 17, 33). Specifically, LEE ET AL (US 6,540,953) fails to claim and WO 99/25464 fails to disclose the recited process, incorporating the step of forming the active layer using a liquid polymer solution.